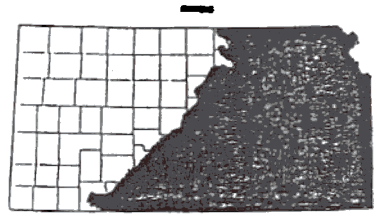
SUBIRRIGATED

KANSAS RANGE SITE DESCRIPTION

1. Location of Site:

Land Resource Areas 72, 73, and 77
Central High Table Land,
Rolling Plains and Breaks,
and Southern High Plains



2. Climate:

See climate for LRA's 72, 73, and 77
(Filed in the front of Section II-E)

3. Topography:

This site occurs on level to nearly level areas adjacent to major streams.

4. Soils and Hydrological Characteristics:

a. This site is characterized by deep, loamy soils having a high water table. Surface soils and subsoils range from loamy sands to silty clay loams. The water table normally varies from 2 to 5 feet below the surface. Its presence significantly affects both the kinds and amounts of potential vegetation. Although the water table fluctuates somewhat during the growing season, moisture is usually available within the root zone of the deeper rooted plants. In some localities the soils are moderately saline. This does not restrict production but does favor larger amounts of salt-tolerant species.

b. The major soils that characterize this site are:

Leshara Lesho Wann

c. The major limitation of these soils when maintained in permanent vegetation is excessive wetness, especially during the spring.

5. Climax Vegetation:

a. The potential vegetation of this site is a tall grass prairie. Tall, deep rooted grasses dominate the site. Prairie cordgrass, eastern gamagrass, big bluestem, indiangrass, and switchgrass are the major species. Combined they make up 60 to 70 percent of the total annual yield. Western wheatgrass, meadow dropseed, American bulrush, knotroot bristlegrass, wildryes, and sedges occur in lesser amounts. Important forbs include maximilian sunflower, Illinois bundleflower, American licorice, and blue verbena. Buttonbush and indigobush amorpha are woody plants commonly occurring on the site. Scattered trees of cottonwood and willow are common in some localities. This site is often used for production of prairie hay.

Eastern gamagrass will likely be more prominent in the southern locations of this site. It will be partially replaced by big bluestem and prairie cordgrass in the northern locations. Some of the grouped species may not occur in all locations. Vinemesquite, for example, is only found in the southern one-third of western Kansas.

b. Guidelines for Determining Range Condition:

(Percentage of total production by weight)

Grasses and Grasslike - 80 Percent			Forbs - 15 Percent		Trees, Shrubs, and Cacti - 5 Percent
	30	big or sand bluestem	American licorice		almondleaf willow
	25	eastern gamagrass	Illinois bundleflower		blackwillow
65	10	indiangrass	10 maximilian sunflower		buttonbush
	10	prairie cordgrass	wholeleaf rosinweed	5	cottonwood
	15	switchgrass			indigobush amorpha
			blue verbena		willow baccharis
		alkali sacaton	blue wildindigo		
		Canada wildrye	Louisiana sagewort		
		common reed	5 nineanther dalea		
		knotroot bristlegrass	pitcher sage		
		little bluestem	sessil tickclover		
		meadow tall dropseed	tall goldenrod		
10		purple lovegrass			
		scribner panicum	baldwin ironweed		
		sideoats grama	culversphysic		
		Texas bluegrass	dogbane		
		vinemesquite	grooved flax		
		Virginia wildrye	heath aster		
		western wheatgrass	russell prairiegentian		
			T spiderwort		
		American bulrush	stenosiphon		
		flatsedges	swamp smartweed		
5		rushes	western ragweed		
		scouringrush	whorled milkweed		
		sedges	wooly verbena		
		blue grama			
		buffalograss			
T		green muhly			
		inland saltgrass			

c. Invaders common to the site are: annual sunflower, barnyardgrass, blackeyedsusan, buckbrush, cocklebur, common switchgrass, daisy fleabane, giant ragweed, sumpweed, Kentucky bluegrass, kochia, locust, osageorange, poison hemlock, red cedar, roughleaf dogwood, Siberian elm, silver bluestem, snow-on-the-mountain, and tamarisk.

6. Management Implications:

This site appears on the more level low areas along major drainages. Due to the availability of water, the vegetation remains lush and green throughout the growing season. This attracts grazing animals to the site creating a need for special grazing management techniques to prevent overgrazing.

When degeneration of the vegetative composition results from overgrazing by cattle, big bluestem, eastern gamagrass, indiangrass, switchgrass, and prairie cordgrass are the primary decreasers. Palatable forbs including maximilian sunflower, wholeleaf rosinweed, Illinois bundleflower, and sessile tickclover also decrease in abundance. Principal increasers include western wheatgrass, meadow tall dropseed, alkali sacaton, American bulrush, tall goldenrod, and woody plants.

Continued regression of the plant community results in increases of lower growing plants such as sideoats grama, blue grama, inland saltgrass, buffalograss, western ragweed, and heathaster.

In the absence of fire and grazing by livestock the vegetation will gradually deteriorate to heavy stands of woody plants including cottonwood, willow, elm, dogwood, and locust. The understory in such condition consists of sparse amounts of Virginia wildrye, green muhly, Texas bluegrass, Kentucky bluegrass, and scribner panicum.

Grazing management that will maintain or improve a subirrigated site must include proper stocking. Grazing systems or planned deferments are needed especially where other range sites are included in the grazing unit. The use of fire will be very helpful in maintaining the site to produce high quality forage. Fire can be utilized to control woody species and to remove the excess growth from lightly used areas.

7. Wildlife Considerations:

The plant diversity generally associated with this site makes it a favorable wildlife habitat. Scattered trees of willow and cottonwood and occasional mottes of low brush create a preferred habitat for white-tail deer, quail, pheasant, turkey, squirrel, cottontail rabbit, and mourning dove. The site is especially valuable as winter cover for deer, pheasant, quail, and rabbit.

Songbirds common on the site include scissortailed flycatcher, eastern kingbird, western kingbird, brown thrasher, eastern bluebird, redwinged blackbird, and brownheaded cowbird. Rodents such as kangaroo rat and field mice are numerous. The main predators frequenting the site are coyotes, red fox, hawks, owls, and occasionally eagles. Fur bearers include skunk, opossum, and raccoon.

Grazing management that maintains this site in good to excellent condition is necessary to continue the high quality wildlife habitat that this site can provide. Prescribed burning is usually necessary to remove the mulch buildup and provide more ideal habitat especially for the young of ground nesting birds.

8. Other Uses and Values:

The high water table of this site limits its use for other than rangeland, wildlifeland, or hayland. Portions of this site, where the water table normally stays below two feet, are used for cropland. Development of this site for commercial use is normally not feasible. It does produce large amounts of attractive vegetation making it desirable for landscaping backgrounds, parks, or natural areas.

9. Herbage Production Guidelines:

The following guidelines are based on available clipping data when this site is in excellent condition. Vigor of principal forage species, time of burning, if fire is used, as well as growing conditions, influence annual herbage production.

Growing Conditions	Total Air Dry Herbage	
	Pounds/Acre	Kilograms/Hectare
Favorable	8,000-9,000	9,000-10,000
Normal	7,000-8,000	7,800-9,000
Unfavorable	6,000-7,000	6,700-7,800

10. Guide to Initial Stocking Rates:

Range Condition	Percent Climax Vegetation	Acres/AU Yearlong	AU Months Per Acre	Hectares/AU Yearlong	AUM's per Hectare
Excellent	76-100	5-7	2.0	2-3	4.94
Good	51-75	7-10	1.5	3-4	3.7
Fair	26-50	10-15	1.0	4-6	2.5
Poor	0-25	15+	.7	6+	1.7

These guidelines are considered safe initial stocking rates from which a sound management program can be built. Grazing only during the dormant season or use of a specialized grazing program will usually allow a substantial increase in the stocking rates shown.

When maintained in good to excellent condition, an average hay yield of approximately 2.0 tons per acre can be expected from this site.

11. Relative Preference of Plant Species:

Preferences of plant species by classes of livestock and uses by wildlife will vary from year to year and season to season. The table below is what might be expected under average climatic conditions and good management.

Forage Preferences

H = High
M = Medium
L = Low

Wildlife Preferred Uses

C = Cover
F = Food
N = Nesting

Plant Species	Animal Species		
	Cattle	Deer	Pheasant
alkali sacaton	M	---	C,N
American bulrush	L	C	C
big bluestem	H	C	C,N
buttonbush	L	C,F	C
common reed	H	C	C
eastern gamagrass	H	C,F	C,F,N
Illinois bundleflower	H	F	F
indiangrass	H	C	C,N
inland saltgrass	M	---	---
maximilian sunflower	H	C,F	C,F
sand bluestem	H	C,F	C,N
scribner panicum	M	F	F
sedges	M	F	F
sessile tickclover	H	F	F
switchgrass	H 2/	C	C,F,N
western wheatgrass	H 1/	F	C,F
wholeleaf rosinweed	H	F	C,F
willow baccharis	L	C	C

1/ Has a high preference during lush growth periods.

2/ Preferred during first half of growing season

Reference:

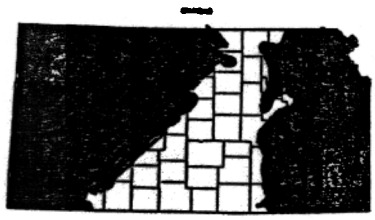
Anderson, Kling L. and Clenton E. Owensby. 1969 Common Names of a Selected List of Plants. Kansas State University Tech. Bul. 117.

SUBIRRIGATED

KANSAS RANGE SITE DESCRIPTION

1. Location of Site:

Land Resource Areas 74, 75, 78, 79, and 80A
Central Kansas Sandstone Hills,
Central Loess Plains,
Central Rolling Red Plains,
Great Bend Sand Plains, and
Central Rolling Red Prairies



2. Climate:

See climate for LRA's 74, 75, 78, 79, and 80A
(Filed in the front of Section II-E)

3. Topography:

This site occurs on level to nearly level areas adjacent to major streams.

4. Soils and Hydrological Characteristics:

a. This site is characterized by deep, loamy soils having a high water table. Surface soils and subsoils range from loamy sands to silty clay loams. The water table normally varies from 1 to 4 feet below the surface. Its presence significantly affects both the kinds and amounts of potential vegetation. Although the water table fluctuates somewhat during the growing season, moisture is usually available within the root zone of the deeper rooted grasses and forbs. In some localities the soils are moderately saline. This does not restrict production but does favor some of the salt-tolerant species.

b. The major soils that characterize this site are:

Dillwyn	Platte
Elsmere	Plevna
Kanza	Waldeck
Kingman	Wann
Lesho	Zenda

c. The major limitation of these soils when maintained in permanent vegetation is excessive wetness, especially during the spring.

5. Climax Vegetation:

a. The potential vegetation of this site is a tall grass prairie. Tall, deep rooted grasses dominate the site. Prairie cordgrass, eastern gamagrass, big bluestem, indiangrass, and switchgrass are the major species. Combined they make up 60 to 70 percent of the total annual yield. Western wheatgrass, meadow dropseed, American bulrush, knotroot bristlegrass, wildryes, and sedges occur in lesser amounts. Important forbs include maximilian sunflower, Illinois bundleflower, American licorice, and blue verbena. Buttonbush and indigobush amorpha are woody plants commonly occurring on the site. Scattered trees of cottonwood and willow are common in some localities. This site is often used for production of native or prairie hay.

Eastern gamagrass will likely be more prominent in the southern locations of this site. It will be partially replaced by big bluestem and prairie cordgrass in the northern locations. Some of the listed species may not occur in all locations. Vinemesquite, for example, is only found in the southern part of Kansas.

b. Guidelines for Determining Range Condition:

(Percentage of total production by weight)

Grasses and Grasslike - 80 Percent			Forbs - 15 Percent		Trees and Shrubs - 5 Percent	
	30	big or sand bluestem		American licorice		blackwillow
	25	eastern gamagrass		Illinois bundleflower		buttonbush
65	10	indiangrass	10	maximilian sunflower	5	cottonwood
	10	prairie cordgrass		wholeleaf rosinweed		indigobush amorpha
	15	switchgrass				peach-leaved willow
				blue verbena		willow baccharis
		alkali sacaton		blue wildindigo		
		Canada wildrye		Louisiana sagewort		
		common reed	5	nineanther dalea		
		knotroot bristlegrass		pitcher sage		
		little bluestem		sessil tickclover		
		meadow tall dropseed		tall goldenrod		
10		purple lovegrass				
		scribner panicum		baldwin ironweed		
		sideoats grama		dogbane		
		Texas bluegrass		grooved flax		
		vinemesquite		heath aster		
		Virginia wildrye		russell prairiegentian		
		western wheatgrass	T	spiderwort		
				stenosiphon		
		American bulrush		swamp smartweed		
		flatsedges		western ragweed		
5		rushes		whorled milkweed		
		scouringrush		woolly verbena		
		sedges				
		blue grama				
		buffalograss				
T		green muhly				
		inland saltgrass				
		Kentucky bluegrass				

c. Invaders common to this site are annual sunflower, barnyardgrass, blackeyedsusan, buckbrush, cocklebur, common witchgrass, daisy fleabane, giant ragweed, kochia, locust, osageorange, poison hemlock, redcedar, roughleaf, dogwood, russianolive, Siberian elm, silver bluestem, snow-on-the-mountain, and tamarisk.

6. Management Implications:

This site appears on the more level low areas along major drainages. Due to the availability of water, the vegetation remains lush and green throughout the growing season. This attracts grazing animals to the site creating a need for special grazing management techniques to prevent overgrazing.

When degeneration of the vegetative composition results from overgrazing by cattle, big bluestem, eastern gamagrass, indiangrass, switchgrass, and prairie cordgrass are the primary decreasers. Palatable forbs including maximilian sunflower, wholeleaf rosinweed, Illinois bundleflower, and sessile tickclover also decrease in abundance. Principal increasers include western wheatgrass, meadow tall dropseed, alkali sacaton, American bulrush, tall goldenrod, and woody plants.

Continued regression of the plant community results in increases of lower growing plants such as sideoats grama, blue grama, inland saltgrass, buffalograss, western ragweed, and heath aster.

In the absence of fire and grazing by livestock the vegetation will gradually deteriorate to heavy stands of woody plants including cottonwood, willow, elm, dogwood, and locust. The understory in such condition consists of sparse amounts of Virginia wildrye, green muhly, Texas bluegrass, Kentucky bluegrass, and scribner panicum.

Grazing management that will maintain or improve a subirrigated site must include proper stocking. Grazing systems or scheduled periods of rest are needed especially where other range sites are included in the grazing unit. The use of fire is helpful in maintaining the site to produce high quality forage. Fire can be utilized to manage woody species and to remove the excess growth from lightly used areas.

7. Wildlife Considerations:

The plant diversity generally associated with this site makes it a favorable wildlife habitat. Scattered trees of willow and cottonwood and occasional mottes of low brush create a preferred habitat for white-tail deer, quail, pheasant, turkey, squirrel, cottontail rabbit, and mourning dove. The site is especially valuable as winter cover for deer, pheasant, quail, and rabbit.

Songbirds common on the site include scissortailed flycatcher, eastern kingbird, western kingbird, brown thrasher, eastern bluebird, redwinged blackbird, and brownheaded cowbird. Rodents such as kangaroo rat and field mice are numerous. The main predators frequenting the site are coyotes, red fox, hawks, owls, and occasionally eagles. Fur bearers include skunk, opossum, and raccoon.

The state threatened Arkansas darter, Etheostoma cragini, is found in perennial reaches of smaller prairie streams having sand or gravel substrates and abundant aquatic vegetation. Streamflows in these streams are often augmented by discharges from adjacent subirrigated soils. Range management practices which maintain the vegetation in good to excellent condition, thereby reducing erosion, are beneficial to darters and other aquatic life in critical stream reaches.

Grazing management that maintains this site in good to excellent condition is necessary to continue the high quality wildlife habitat that this site can provide. Prescribed burning is usually necessary to remove the mulch buildup and provide more ideal habitat especially for the young of ground nesting birds.

8. Other Uses and Values:

The high water table of this site limits its use for other than rangeland, wildlifeland, or hayland. Portions of this site, where the water table normally stays below two feet, are used for cropland. Development of this site for commercial use is normally not feasible due to the high water table. It does produce large amounts of attractive vegetation making it desirable for landscaping backgrounds, parks, or natural areas.

9. Herbage Production Guidelines:

The following guidelines are based on available clipping data when this site is in excellent condition. Vigor of principal forage species, proper burning techniques, as well as growing conditions, influence annual herbage production.

	Total Air Dry Herbage	
Growing Conditions	Pounds/Acre	Kilograms/Hectare
Favorable	9,000-10,000	10,100-11,200
Normal	8,000-9,000	9,000-10,100
Unfavorable	7,000-8,000	7,850-9,000

10. Guide to Initial Stocking Rates:

Range Condition	Percent Climax Vegetation	Acres/AU Yearlong	AU Months Per Acre	Hectares/AU Yearlong	AUM's per Hectare
Excellent	76-100	4-5	2.5	2	6
Good	51-75	5-7	2.0	2-3	5
Fair	26-50	7-10	1.5	3-4	3.7
Poor	0-25	10+	1.0	4+	2.5

These guidelines are considered safe initial stocking rates from which a sound management program can be built. Grazing only during the dormant season or use of a specialized grazing program will usually allow a substantial increase in the stocking rates shown.

When maintained in good to excellent condition, an average hay yield of 2.5 to 3.0 tons per acre can be expected from this site.

11. Relative Preference of Plant Species:

Preferences of plant species by classes of livestock and uses by wildlife will vary from year to year and season to season. The table below is what might be expected under average climatic conditions and good management.

Forage Preferences

H = High
M = Medium
L = Low

Wildlife Preferred Uses

C = Cover
F = Food
N = Nesting

Plant Species	Animal Species			
	Cattle	Deer	Turkey	Pheasant
alkali sacaton	M	---	C,N	C,N
American bulrush	L	C	C	C
big bluestem	H	C	C,N	C,N
buttonbush	L	C,F	C	C
common reed	H	C	C	C
eastern gamagrass	H	C,F	C,F,N	C,F,N
Illinois bundleflower	H	F	F	F
indiangrass	H	C	C,N	C,N
inland saltgrass	M	---	---	C
maximilian sunflower	H	C,F	C,F	C,F
sand bluestem	H	C	C,N	C,N
scribner panicum	M	F	F	F
sedges	M	F	F	F
sessile tickclover	H	F	F	F
switchgrass	H 2/	C	C,F,N	C,F,N
western wheatgrass	H	F 1/	C	C,N
wholeleaf rosinweed	H	F	C,F	C,F
willow baccharis	L	C	C	C

1/ Has a high preference during lush growth periods.

2/ Preferred during first half of growing season.

Reference:

Anderson, Kling L. and Clenton E. Owensby. 1969 Common Names of a Selected List of Plants. Kansas State University Tech. Bul. 117.